

Draft CVPIA Fiscal Year 2011 Annual Work Plan

January 31, 2011

Program Title: *Anadromous Fish Restoration Program 3406(b)(1)*

Responsible Entities

Staff Name	Agency	Role
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Program Goals and Objectives for FY 2011

The goal of the Anadromous Fish Restoration Program (AFRP), as stated in Section 3406(b)(1) of the Central Valley Project Improvement Act (CVPIA), is to "develop within three years of enactment and implement a program which makes all reasonable efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991". Section 3406(b)(1) also states that "this goal shall not apply to the San Joaquin River between Friant Dam and the Mendota Pool".

The objectives for the AFRP can be found in the Final Restoration Plan for the Anadromous Fish Restoration Program (Restoration Plan)¹:

1. Improve habitat for all life stages of anadromous fish through provision of flows of suitable quality, quantity, and timing, and improved physical habitat.
2. Improve survival rates by reducing or eliminating entrainment of juveniles at diversions.
3. Improve the opportunity for adult fish to reach their spawning habitats in a timely manner.
4. Collect fish population, health, and habitat data to facilitate evaluation of restoration actions.
5. Integrate habitat restoration efforts with harvest and hatchery management.
6. Involve partners in the implementation and evaluation of restoration actions.

The Restoration Plan was completed in 2001 to guide the long-term development of the AFRP. The Restoration Plan provides a programmatic-level description of the AFRP and, is used to guide the implementation of all of the provisions of the CVPIA that contribute to the goal of making all reasonable efforts to at least double natural production of anadromous fish (AFRP doubling-goal). The following provisions contribute to accomplishing the goal of the AFRP (b)(1) program: (b)(1)(B), (b)(2), (b)(3), (b)(12), (b)(13), (b)(16), and (b)(21). The Restoration Plan presents a list of reasonable actions and evaluations for each Central Valley watershed and a process by which actions and evaluations were determined to be reasonable. The Restoration Plan identifies the need for partners, local involvement, public support, adaptive management, and flexibility as key attributes of the AFRP approach.

The AFRP is one of five CVPIA programs that has been integrated with the California Bay-Delta

¹ Final Restoration Plan for the Anadromous Fish Restoration Program, A Plan to Increase Natural Production of Anadromous Fish in the Central Valley of California. Released as a Revised Draft on May 30, 1997 and adopted as final on January 9, 2001. CVPIA, AFRP, Stockton, CA. [http://www.fws.gov/stockton/afrp/restplan_final.cfm].

Authority (CBDA) Ecosystem Restoration Program (ERP) (Record of Decision, 2000)². To facilitate this integration, the above objectives are included in the CBDA ERP Draft Stage 1 Implementation Plan.³ These objectives are also complementary to other goals and objectives listed in the Draft Stage 1 Implementation Plan and would help address the objectives of the CBDA's Multi-Species Conservation Strategy⁴ and the Biological Opinion on the Long Term Operations of the Central Valley Project and State Water Project⁵. The AFRP shares CBDA's vision of the Single Blueprint concept which provides a unified and cooperative approach to restoration. The AFRP is committed to integrating its activities with the Ecosystem Restoration Program's actions and evaluations and using a scientifically-based adaptive management approach, consistent with the CALFED Science Program, to achieve AFRP objectives.

During FY 11 the AFRP will be carefully reviewing and evaluating opportunities to adopt the recommendations of the Fisheries Independent Panel review (<http://www.cvpia-independentreview.com/fisheriesReports.html>). In particular, AFRP is well poised to review the Ecological Risk Assessment/Ecosystem Management approach discussed in Section 3a of the review report. Some of the elements AFRP will consider in FY 11 include conceptual models, hypotheses, metrics to capture ecosystem function, standardized methods and data management. AFRP also supports recommendations to improve collaboration and coordination both within the CVPIA Programs, as well as with other programs focused on similar goals. AFRP will be working diligently to increase our efforts to meet this need.

Status of the Program

The Restoration Plan presents the goal, objectives, and strategies of the AFRP, as well as a list of reasonable actions and evaluations for each Central Valley watershed. The Restoration Plan identifies the need for partners, local involvement, public support, adaptive management, and flexibility as key attributes of the AFRP approach to making all reasonable efforts to at least double natural production of anadromous fish.

AFRP projects implemented from actions and evaluations in the Restoration Plan since 1995 have addressed environmental limiting factor categories that were derived from Central Valley watershed limiting factors listed in the AFRP Working Paper (Working Paper)⁶. In the early program years, the AFRP emphasized planning and environmental inventories. These were followed by implementation of habitat restoration projects. Restoration projects are implemented throughout the Central Valley watersheds in accordance with AFRP restoration priority criteria.

Progress made towards addressing the environmental limiting factor categories identified in the Working Paper and implementation of the restoration actions and evaluations in the Restoration Plan is available on the AFRP website (<http://www.fws.gov/stockton/afrp/>). Note that addressing actions is not synonymous with "completed"; it means that one or more projects or activities have been initiated that are necessary to change the status of the Limiting Factor or Action or Evaluation. About 38% of the watershed specific environmental limiting factors (200) in the Working Paper have been addressed and

² Programmatic Record of Decision, CALFED Bay-Delta Program, August 28, 2000. Sacramento, CA.

³ Draft Stage 1 Implementation Plan, August 2001. Ecosystem Restoration Program, CALFED Bay-Delta Program. Sacramento, CA.

⁴ CALFED Bay-Delta Program Multi-Species Conservation Strategy. August 28, 2000. California Bay-Delta Program. Sacramento, CA.

⁵ Biological Opinion on the Long Term Operations of the Central Valley Project and State Water Project. June 4, 2009. USBR Sacramento, CA.

⁶ USFWS. 1995. Working paper on restoration needs, habitat restoration actions to double natural production of anadromous fish in the Central Valley of California, Volume 3, AFRP. [<http://www.fws.gov/stockton/afrp/workingpaper.cfm>].

34% of all Restoration Plan actions (289) and evaluations have been implemented in the 1995 to 2010 time period. Of the 73 high and medium priority structural actions and evaluations in the Restoration Plan, 30 (41%) have been completed. Of the 128 Restoration Plan actions with endpoints, 43 (34%) have been completed. Actions requiring annual or in perpetuity projects such as gravel augmentation (replacing gravel lost behind dams) and flow augmentation are not considered to have endpoints. Status of these actions are reported under other provisions of the CVPIA such as the (b)(2), (b)(3), and (b)(13) programs.

The AFRP also documents its progress toward achieving its doubling goal targets by calculating anadromous fish natural production estimates that incorporate in-river and hatchery escapement, ocean and in-stream harvest, and the proportion of hatchery returns that spawn in-river⁶. The doubling goal targets for fall, late-fall, winter, and spring runs of Central Valley Chinook salmon are 750,000, 68,000, 110,000, and 68,000 respectively. Central Valley Chinook salmon production (all races) dropped below the baseline (1967-1991) production as a result of the low returns of fall run fish in 2009. Average Chinook salmon production for the period 1992-2009 has exceeded the doubling goal target on Clear, Butte, and Battle Creeks and is just below the goal on the Mokelumne River. Substantial gains in fish populations have occurred where investment in flow and passage has occurred (Butte & Clear Creeks). Clear Creek has also had a substantial investment in habitat. Winter-run production numbers had continued to trend upward since 1994 until the 2007, 2008, and 2009 returns. Spring-run numbers have trended upwards since 1991, but production was reduced in 2008 and 2009. Fall-run production is up from the baseline by 3.5%, but has declined in recent years. Late fall-run production has increased greatly since the low period (1993-1997) but also declined in 2009. Data on Chinook salmon doubling can be found in the Chinookprod file on the AFRP website (<http://www.fws.gov/stockton/afrp>). 2010 production numbers are not yet reported but will be updated when the data becomes available in April 2011.

FY 2010 Accomplishments

The AFRP continued to accomplish the objectives of developing restoration projects with partners, overseeing implementation of AFRP funded projects, working with local landowners, sharing restoration and anadromous fish expertise, and representing program goals at public and technical meetings. Note that Final Restoration Plan Action numbers indicated in parentheses refer to the Action specific to a stream.

Accomplishments for FY 2010 in the Sacramento Basin

Antelope Creek The Juvenile Fish Passage Improvement Project at Edwards Diversion Dam (Action 1) was initiated in FY08 to have environmental compliance and construction plans developed. The juvenile fish passage improvement will prevent out-migrating salmonids from becoming entrained in the two diversion canals at Edwards Diversion Dam. Although the diversions are screened, no bypass system was installed during construction due to site complexity. The Tehama County Resource Conservation District (TCRCD) completed a feasibility study, started the environmental compliance documents, and developed project designs during this reporting period. Construction is expected to begin in the summer of 2011. This project is a cooperative effort between the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS), TCRCD, Los Molinos Mutual Water Company, and the Edwards Ranch.

A road crossing in the CDFG Tehama Wildlife Area is currently a barrier to spring- and fall-run Chinook salmon during dry years. In FY08, this project received USFWS National Fish Passage Program funds to develop the environmental compliance and construction designs for the Antelope Creek Crossing Repair Project in the Tehama Wildlife Area (Action 1). FY09 AFRP funds were added to this project to obtain

formal permissions, finalize permits, and complete a bid package. FY10 AFRP funds were used to fund construction which once completed will improve passage to 13 miles of spawning and holding habitat. This project is a cooperative effort between the USFWS and CDFG.

Battle Creek The Battle Creek Salmon and Steelhead Restoration Project (Restoration Project)(Actions 2, 6, and 7) has seen significant progress in the past twelve years. Two of the seven construction contracts are underway as of summer 2010. The key project elements of Eagle Canyon Dam screen and ladder, North Battle Creek Feeder Dam Screen and Ladder, Wildcat Dam, and Wildcat Canal removal are underway. A total of \$12million has been awarded and the notice-to-proceed has been granted for these USBR contracts. For detailed information on the progress of these collaborative efforts go to <http://www.usbr.gov/mp/battlecreek/index.html>.

Big Chico Creek The permitting and environmental documentation for the Iron Canyon Fish Ladder Project (Action 2) that was funded in FY07 were completed this year. The Army Corps of Engineers Clean Water Act Section 404 Permit and the ESA section 7 consultation were submitted in 2010. A minimum of \$870,000 is still needed to fund construction of this project which is being sought by the Chico State University Foundation. Completion of the new passage facility at Iron Canyon will provide access to an estimated 8 miles of quality spring run Chinook salmon habitat.

Butte Creek Over the past several years many projects, which benefit salmonid survival and production, have been funded by AFRP to facilitate passage and reduce entrainment at facilities in the Butte Creek watershed. The Lower Butte Creek Project, Phase III Consolidated Action Summary Report was reviewed and finalized in 2010. A federal lead for the final action is also still being negotiated. For more information on these activities and recently completed final reports (Evaluations 1-9) visit the AFRP website at <http://www.fws.gov/stockton/afrp/>.

Cottonwood Creek The Nonnative Invasive Plant Management and Control Project (Action 5) was funded in FY 09 to complete the environmental compliance documents and permitting to eradicate non-native noxious and invasive (NIS) plants within the riparian corridor of Cottonwood Creek. Non-native plant inventories of the targeted species were completed this year to assist with the National Environmental Policy Act (NEPA) effects analysis.

The Anderson-Cottonwood Irrigation District (ACID) siphon is becoming exposed once again in Cottonwood Creek and poses a passage problem for adult salmonids. The environmental documentation, permits, and design for the Cottonwood Creek ACID Siphon Project (Action 2) were completed in 2010. This is a cooperative project with USFWS, CDFG, ACID, NMFS, and the landowners.

The Cottonwood Creek Geomorphological Analysis Project (Action 1) was funded in FY09 to develop a sediment budget and assist in determining the cause of streambed instability. The study is to include analyses of geomorphological data from 1939 to present; quantify spatial and temporal characteristics of sediment supply, storage, and transport in the system; and to identify the effects of sediment transport dynamics on perceived channel and watershed changes. Continuous flow and turbidity data was collected at a U.S. Geological Survey (USGS) water quality station from October 2009 to September 2010.

Cow Creek AFRP provided FY07 funds to the Western Shasta Resource Conservation District (WSRCD) for the Millville Diversion Environmental Compliance Project (Action 3) to complete all environmental compliance documents necessary to obtain permits to modify the diversion dam for fish passage. The conceptual design for a boulder weir fishway was developed in FY09. In FY10 additional biological assessments were completed to assist in analyzing the effects of the proposed action. This project will open up 10 miles of historic habitat to fall run Chinook salmon and Central Valley steelhead.

The California Department of Water Resources (DWR) Fish Passage Improvement Program is providing initial engineering design. This is an interagency effort with DWR, CDFG, CALFED Ecosystem Restoration Program (ERP), and the Natural Resource Conservation Service (NRCS).

Bear, Cottonwood, and Cow Creeks The video weir monitoring project for Bear, Cottonwood, and Cow creeks was implemented from October to December 2009. As an additional element in FY10, the Bear Creek site was operated for a longer time period (through April 2010) to determine the feasibility of determining adult steelhead escapement. The information is utilized to calculate natural production estimates and is used to guide AFRP restoration efforts and evaluate program performance. Annual summary reports are available on the AFRP website (<http://www.fws.gov/stockton/afrp>). This work was completed through a cooperative effort of the USFWS, CDFG, WSRCD, and the Cottonwood Creek Watershed Group.

Mill Creek The AFRP provided FY07 funding to implement a pilot study to assess the feasibility of counting adult Chinook salmon escapement in Mill Creek using fixed-location hydroacoustic techniques. In FY10 the DIDSON was deployed for approximately two weeks during the snowmelt runoff when visibility in Mill Creek was severely reduced. This action is to supplement the CDFG video weir in determining the spring Chinook salmon escapement in Mill Creek. The information is utilized to calculate natural production estimates and is used to guide AFRP restoration efforts and evaluate program performance. The Mill Creek natural production estimates are available in the Chinookprod file on the AFRP website (<http://www.fws.gov/stockton/afrp>).

Feather River A project intended to result in the acoustic tagging and tracking of North American green sturgeon, which is listed as threatened under the Endangered Species Act, was initiated in the Feather and Yuba rivers in FY10. The purpose of this study is to examine sturgeon migratory, holding, and spawning behavior and identify key habitat features associated with this rare fish (Evaluation 7). Side scanning sonar was used to monitor likely holding habitat (i.e., large pools). This study involves Cramer Fish Sciences, DWR, and CDFG as partners. Cramer Fish Sciences provided a \$1,600 cost share toward the purchase of the side scanning sonar equipment.

Yuba River. A pre-project assessment (Phase 1 of 4 phases) was completed at Hammon Bar, upstream of Daguerre Point Dam, for potential riparian habitat restoration targeting juvenile Chinook salmon and steelhead. This assessment involved geomorphic, hydrologic, and vegetational components, and included substantial public outreach. A topographic map for restoration planning and preliminary conceptual diagrams for restoration projects at Hammon Bar and locations upstream as far as Parks Bar have been developed. The Hammon Bar Habitat Restoration Project Phase 2, of 4 phases, (Evaluation 4) was funded in FY09 to complete a juvenile fish habitat assessment, land use analysis, permits, and designs. The juvenile fish habitat assessment and land use analysis was completed for about 3.5 miles of the lower Yuba River. Four sites totaling approximately 129 acres have been determined as appropriate to receive extensive planting of cottonwood trees, which is anticipated to be the next phase of implementation for this project. A concept design report describing site-specific habitat restoration activities was completed and the environmental compliance documents are being developed. This project is a cooperative effort between the USFWS, Bureau of Land Management (BLM), CDFG, the South Yuba River Citizens League (SYRCL), Western Aggregates Inc., Yuba Outdoor Adventures, and the Yuba Preservation Foundation. Matching funds of \$50,000 were provided by Western Aggregates, Inc. for work implemented on their property.

A report on the results of the Vaki Riverwatcher data collected in 2003 has been completed by CDFG and submitted to USFWS. Data from the two VAKI Riverwatcher fish counting systems placed in the north and south ladders at Daguerre Point Dam allowed for categorizing immigrating Chinook salmon to race.

The 2003 report also includes information on Chinook salmon immigration patterns, timing, and presence of out-of-basin (adipose fin-clipped) salmon migrants to the lower Yuba River. The VAKI Riverwatcher systems were upgraded in 2010. Data has continued to be collected to better understand the timing, abundance, population trends, and response to changing flow and temperature conditions of adult spring and fall-run Chinook salmon, and Central Valley steelhead in the Lower Yuba River (Action 7). This information will help improve management of these species in the Lower Yuba River, including actions such as salmonid habitat restoration projects and providing appropriate in-stream flow regimes. This work is being conducted as part of the Lower Yuba River Accord; USFWS partners include the Yuba County Water Agency, Pacific Gas & Electric Company, CDFG, NMFS, and NGOs. Matching funds of \$50,000 were provided by the Yuba River Management Fund (i.e., the lower Yuba River Accord) for the 2010 Vaki equipment upgrade, plus \$50,000 for operation costs.

Bear River Thermographs were installed at six locations in Dry Creek, a tributary to the Bear River. Baseline temperature data is being collected to assess summer habitat conditions for Central Valley steelhead (Action 2). Investigating the potential habitat restoration of Dry Creek is a cooperative effort with the Friends of Spenceville and Beale Air Force Base.

American River Bathymetric surveys were conducted in support of the development of a 2-D model for habitat restoration activities. In FY10, designs were completed, National Historic Preservation Act section 106 compliance was obtained, and NEPA documents modified to conduct habitat restoration work. Specifically, an existing gravel bar was extended across the river, providing spawning habitat at the site and vegetated rearing habitat extending for one-half mile upstream of the site along both banks (Action 5). Also, a dewatered side channel was restored by adding gravel to a downcut section. This side channel is about 0.25 miles long. This work is being conducted in cooperation with the U.S. Bureau of Reclamation (USBR) and the Sacramento Area Water Forum. The CVPIA b(13) program provided a \$150,000 cost share for this project.

Accomplishments for FY 2010 in the San Joaquin Basin

Mokelumne River. AFRP FY10 funds were provided for the Mokelumne River Spawning Habitat Improvement Project (Actions 2 and 7) to purchase 4,166 yds³ of spawning gravel to improve natural production of Chinook salmon and steelhead at several spawning sites. All funds and labor required to place the gravel were provided by the East Bay Municipal Utility District (EBMUD). This project area is rigorously characterized and monitored each year for spawning use, bed form and function and provides a foundation project for the Spawning Habitat Integrated Rehabilitation Approach (SHIRA) as conducted by UC Davis. AFRP and EBMUD funds and labor were used to complete monitoring activities. The final report will be available after the project is completed in 2012. A total of \$400,000 in AFRP funds and \$240,000 in EBMUD funds and labor have been used to complete all phases of this project to date.

In FY2010, AFRP staff worked with the EBMUD and other signatories of the Lower Mokelumne Joint Settlement Agreement to adaptively manage the system and coordinate fall pulse flows (25,000 acre feet) in an effort to improve adult Chinook salmon returns. In 2010, water conditions allowed for an additional spring pulse flow of 43,000 acre feet that was provided to assist outmigrating juvenile salmon and steelhead (Action 1 and Evaluation 1).

Calaveras River. AFRP staff have been actively involved with the Friends of the Lower Calaveras River (FLCR) since the inception of the group in 2008. FLCR is a group with more than 160 members, supported by more than 11 diverse stakeholders, that focuses on educating residents of the Lower Calaveras River watershed about resource values and concerns associated with the river. AFRP has joined FLCR in public outreach activities including the Stockton Earth Day Festival, monthly FLCR

nature walks, river clean-ups, and a Calaveras River Education and Appreciation Day in early-fall 2010 (USFWS Connecting People With Nature Grant, \$4,125).

The Calaveras River Passage Improvement Project (Action 3) will complete the retrofit of one migration impediment (Budiselich Flashboard Dam) and begin implementation to replace and/or retrofit one or more migration impediments to salmon and Central Valley steelhead in the lower Calaveras River. This project will restore access to about 10 miles of habitat. Final designs and permits for the Budiselich Flashboard Dam boulder weir retrofit were completed this year. Final designs for improved passage at the Caprini and California Traction Railroad crossings were also completed this year and permitting was initiated. This project is a cooperative effort between the USFWS, Stockton East Water District (SEWD), Fisheries Foundation of California (FFC), University of the Pacific, CDFG, and DWR. Project partners have provided a mix of in-kind contributions, funding of previous related projects, and current project support. The current project is currently funded by a grant from AFRP (\$200,000), the USFWS National Fish Passage Program (\$262,395), and SEWD (\$462,395).

Cosumnes River. The Cosumnes River Passage Improvement Project (Evaluation 2) was funded in FY09 to improve fish passage at Rooney Dam. This project will eliminate this migration barrier by constructing a four tiered boulder weir fishway. The environmental documents and designs were completed and construction began in the fall of 2009. Final placement of the boulder weirs was completed in 2010 and post-project monitoring will continue into 2011. This project will restore access to about 10 miles of habitat. AFRP is collaborating with Fishery Foundation of California, Omochumne-Hartnell Water District, Robertson-Bryan, Inc., and CDFG and has leveraged over \$250,000 in cost share and in-kind services to date.

Additionally, AFRP has provided support to a group of stakeholders involved with managing the Cosumnes River Preserve. This group is in the process of developing conceptual designs to re-connect sloughs and floodplains within the preserve. The group is actively seeking the expertise of riparian and aquatic specialists to ensure that these projects are complimentary to riparian restoration and floodplain re-connection goals. One site, Cougar Wetlands, has been surveyed and a conceptual design to restore 80-85 acres within three historic sloughs in the Delta has been developed. Funding for the survey work has come from Ducks Unlimited (\$40,000), with the additional project partners providing more than \$20,000 of in-kind support. Current project partners include AFRP, Ducks Unlimited, BLM, and the Nature Conservancy.

Stanislaus River. FY10 accomplishments included the collection of both juvenile and adult passage data via rotary screw trapping (juveniles) and a fish counting weir (adults) operated in partnership with Tri-Dam (Action 1, Evaluations 2 and 6). The rotary screw trapping was funded with FY09 (b)(16) CAMP funds. Phase 1 (out of 3 phases) of a study to determine the relative contribution rates of juvenile Chinook salmon that migrate as fry versus smolt out-migrants to adult escapement was completed this year. The study uses state of the art microchemistry and microstructure techniques to assess juvenile migratory history from adult otoliths recovered in the river by CDFG. This study was funded with FY09 USBR New Melones Revised Plan of Operations funding. AFRP is partnering with CDFG and Cramer Fish Sciences to implant acoustic transmitters in *O. mykiss* captured in screw traps or other sampling activities to evaluate outmigration and survival (Action 1, Evaluation 2). These studies assist with evaluating benefits resulting from habitat restoration actions and summary reports are available in the AFRP website (<http://www.fws.gov/stockton/afrp>).

The Environmental Assessment, Initial Study/Mitigated Negative Declaration, and ESA section 7 consultations were completed for two floodplain and side-channel enhancement projects (Honolulu Bar

and Lancaster Road). These projects were designed to increase juvenile salmonid rearing habitat and decrease predation and construction will begin in 2011 (Action 2). The Lancaster Road Project will restore 640 feet of riparian side channel habitat. The Honolulu Bar Project will restore 2.47 acres of riparian floodplain, create 0.7 acres of new floodplain, add 8,100 cubic yards of clean spawning gravel to the river, and restore 485 feet of side-channel habitat. AFRP collaborated with Tri-Dam, Oakdale Irrigation District (OID), U.S. Army Corps of Engineers (USCOE), and FishBio leveraging over \$375,808 in cost share and in-kind services to date. AFRP organized the 1st Annual Stanislaus River Salmon Festival on November 7th, 2009 and the event was attended by approximately 1,500 people. AFRP is partnering with the USCOE, USBR, NRCS, CDFG, East Stanislaus Resource Conservation District, Tri-Dam, and FFC to host this annual event in 2010.

Merced River AFRP staff continued to administer the agreement for rotary screw trap monitoring of outmigrant juvenile salmon that was funded with FY08 FWS Fisheries Program funds. Outreach, planning, designs, and permitting for three different floodplain and channel restoration projects (Action 3) were initiated in 2010. The flow parameters, topographic surveys, benthic macro-invertebrate sampling, and substrate quality assessments were completed for all three floodplain and channel restoration projects. The Merced River Ranch Floodplain Enhancement Project (MRR) final designs were completed in 2010. The MRR Environmental Assessment/Initial Study environmental compliance document was also completed during this reporting period. All permits for the Merced River Ranch project were completed in FY10 and the restoration monitoring plan was finalized. Pre-construction monitoring activities included hydraulic, topographic, water quality, biological, and vegetation monitoring. Construction activities during the summer of 2010 included placement of approximately 12,000 yds³ of coarse sediment for spawning habitat. The Merced River Ranch Floodplain Enhancement Project will restore up to 6 acres of riparian floodplain and 1.23 miles of spawning habitat. AFRP is collaborating with Santa Fe Aggregates, Inc., CDFG, CALFED ERP, and DWR.

Tuolumne River The Bobcat Flat Restoration Project (Action 2) funds an ongoing project that restores spawning, rearing, and floodplain habitats in the Tuolumne River. The Environmental Assessment, Initial Study/Mitigated Negative Declaration, and ESA section 7 consultation were completed in FY 2010. Topographic and vegetation surveys were also completed this year. Phase 2 of the Bobcat Flat Restoration Project will be implemented in the summer of 2011 and includes the excavation of 48,500 yds³ of gravel and coarse material from 11 acres of highly disturbed floodplain from historic dredger mining. This project will restore about 1.6 miles of fall run Chinook salmon and Central Valley steelhead spawning and rearing habitat once it is completed. AFRP is collaborating with Friends of the Tuolumne whom have provided \$175,000 in gravel (13,000 yds³) as cost share and the CDFG.

San Joaquin River AFRP staff partnered with CDFG to install VEMCO acoustic receivers in the San Joaquin River and begin a sturgeon population assessment (Evaluation 4). Sampling with trammel nets, trot lines, and angling was initiated in March 2010 and continued through September 2010.

Table 1. FY 2011 Activities and Costs

AWP Activity Number	Type of Activity	# of FTE's	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding				
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources	
1.1	Program Management												
1.1.1		0.51	Region 8 Program Administration - USFWS Pacific Southw est Management/Admin				Y	\$111,450	\$111,450	\$0	\$0	\$111,450	
1.1.2		0.2	CVPIA Program Management and Supervision					\$43,733	\$43,733	\$0	\$0	\$43,733	
1.1.3		0.8	USFWS co-lead - Program Manager				Y	\$189,549	\$189,549	\$0	\$0	\$189,549	
1.1.4		0.1	USBR Northern Valley Coordination				Y	\$20,000	\$20,000	\$0	\$0	\$20,000	
1.1.5		1	USFWS Assistant Program Manager - Directs the day to day program activities, develops annual w ork plan, manages program budget.				Y	\$236,936	\$236,936	\$0	\$0	\$236,936	
								Subtotal Funding	\$601,668	\$601,668	\$0	\$0	\$601,668
								Reclamation	\$20,000	\$20,000	\$0	\$0	\$20,000
								Service	\$581,668	\$581,668	\$0	\$0	\$581,668
								Other	\$0	\$0	\$0	\$0	\$0
1.2	Program Support												
			HRCs manage contracts and grants, develop projects, facilitate communication, provide outreach, and analyze and report on data. Assistants assist in these duties.										
1.2.1		0.85	Habitat Restoration Coordinator (Mokelumne, Cosumnes, and Calaveras rivers) - USFWS - Stockton				Y	\$201,396	\$201,396	\$0	\$0	\$201,396	
1.2.2		1	Habitat Restoration Coordinator (Merced, Tuolumne, and San Joaquin rivers) - USFWS - Stockton				Y	\$236,936	\$236,936	\$0	\$0	\$236,936	
1.2.3		1	Habitat Restoration Coordinator (Feather, Yuba, Bear, and American rivers) - USFWS - Stockton				Y	\$236,936	\$236,936	\$0	\$0	\$236,936	
1.2.4		1	Habitat Restoration Coordinator (Stanislaus River) - USFWS - Stockton				Y	\$236,936	\$236,936	\$0	\$0	\$236,936	
1.2.5		1	Assistant Habitat Restoration Coordinator - USFWS - Stockton				Y	\$236,936	\$236,936	\$0	\$0	\$236,936	
1.2.6		1	Assistant Habitat Restoration Coordinator - USFWS - Stockton				Y	\$236,936	\$236,936	\$0	\$0	\$236,936	
1.2.7		1	Habitat Restoration Coordinator (Antelope, Bear, Cottonw ood, Cow , Deer, Elder, Mill, Paynes, Stony, and Thomes creeks) - USFWS - Red Bluff				Y	\$239,608	\$239,608	\$0	\$0	\$239,608	
1.2.8		1	Habitat Restoration Coordinator (Battle, Big Chico, Butte creeks and the Sacramento River - USFWS - Red Bluff				Y	\$239,608	\$239,608	\$0	\$0	\$239,608	
1.2.9		0.255	Regional Budget and Contracting Support - USFWS - Sacramento Regional Office				Y	\$55,689	\$55,689	\$0	\$0	\$55,689	
								Subtotal Funding	\$1,920,981	\$1,920,981	\$0	\$0	\$1,920,981
								Reclamation	\$0	\$0	\$0	\$0	\$0
								Service	\$1,920,981	\$1,920,981	\$0	\$0	\$1,920,981
								Other	\$0	\$0	\$0	\$0	\$0

AWP Activity Number	Type of Activity	# of FTE's	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding			
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources
1.4	Restoration Actions											
1.4.1	Mill Creek: Riparian Habitat Maintenance & Restoration (Habitat Assessment and Planning); riparian habitat; Fall Chinook, Spring Chinook, and Steelhead; assess up to 37,000 acres of riparian habitat; Red Bluff FWS				# of FRP Actions and Evaluations; # of habitat assessments completed; # of acres of riparian habitat assessed	Action 4 (High Priority) structural Y, endpoint Y; assess 37,000 acres of riparian habitat	N	\$110,130	\$110,130	\$0	\$0	\$110,130
1.4.2	Cottonwood Creek Geomorphological Analysis (Habitat Assessment); habitat; Fall Chinook, Spring Chinook, and Steelhead; assess up to 43 river miles of spawning habitat; Red Bluff FWS				# of FRP Actions and Evaluations; # of habitat assessments completed; # of instream miles assessed	Action 4 (High Priority) structural Y, endpoint Y; 43 miles of stream assessed	N	\$95,400	\$95,400	\$0	\$0	\$95,400
1.4.3	Mokelumne River Spawning Habitat Improvement Project (Implementation); Process 6,557 tons of gravel and restore 0.8 miles of spawning habitat downstream of Camanche Dam; gravel, habitat; Fall Chinook and Steelhead; Stockton FWS				# of FRP Actions and Evaluations; tons of gravel; # of stream miles restored	Action 7 (High Priority) structural Y, endpoint Y; 6,557 tons of gravel; 0.8 miles of spawning habitat	Y	\$106,000	\$106,000	\$0	\$0	\$106,000
1.4.4	Merced River Ranch Floodplain Enhancement (Phase 2 begin implementation and process 39,600 tons of gravel); gravel, habitat; Fall Chinook and Steelhead; Restore 6 acres of riparian floodplain and 1.23 miles of spawning habitat; Stockton FWS				# of FRP Actions and Evaluations; tons of gravel; # of floodplain acres restored; # of stream miles restored	Action 3 (High Priority) structural N, endpoint N; 39,600 tons of gravel; 6 acres of floodplain habitat; 1.23 stream miles restored	N	\$546,914	\$546,914	\$0	\$0	\$546,914
1.4.5	Stanislaus River Honolulu Bar Floodplain Restoration (Phase 3 Post Project Monitoring; 50% cost share); gravel, habitat; Fall Chinook and Steelhead; Restore up to 2.4 acres of riparian floodplain and 1.5 miles of spawning habitat; Stockton FWS			Action III.2.3	# of FRP Actions and Evaluations; # of floodplain acres restored; # of stream miles restored	Action 2 (High Priority) structural N, endpoint N; 2.4 acres of floodplain habitat; 1.5 stream miles restored	N	\$63,060	\$63,060	\$0	\$0	\$63,060

AWP Activity Number	Type of Activity	# of FTEs	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding			
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources
1.4	Restoration Actions continued											
1.4.6			Yuba River Hammon Bar Pilot Restoration (Planning, Permitting, and Design; Pre-project Monitoring); habitat; Fall Chinook, Spring Chinook, and Steelhead; Restore up to 5 acres of riparian floodplain and 3.5 miles of rearing habitat; Stockton FWS		# of FRP Actions and Evaluations; # of floodplain acres restored; # of stream miles restored	Evaluation 4 (High Priority) structural Y, endpoint Y; 5 acres of floodplain habitat; 3.5 stream miles restored	N	\$159,000	\$159,000	\$0	\$0	\$159,000
1.4.7			Lower American River Spawning and Rearing Habitat Restoration Project (Implementation); gravel, habitat; Fall Chinook and Steelhead; Restore up to 1 mile of spawning habitat and 1 acre of rearing habitat; Stockton FWS		# of FRP Actions and Evaluations; # of floodplain acres restored; # of stream miles restored	Action 5 (High Priority) structural N, endpoint N; 1 acre of floodplain habitat; 1 stream mile restored	N	\$139,000	\$139,000	\$0	\$0	\$139,000
1.4.8			Yuba River Narrows Habitat Enhancement Project (Provides funds to the Yuba County Resource Conservation District for Planning, Design, and Permitting to remove 129,000 m³ of rock and process 59,000 tons of gravel); gravel, habitat; Spring Chinook and Steelhead; Restore up to 0.17 river miles of spawning habitat; Stockton FWS		# of FRP Actions and Evaluations; tons of gravel; # of stream miles restored	Evaluation 4 (High Priority) structural N, endpoint Y; 59,000 tons of gravel; 0.17 stream miles restored	N	\$79,500	\$79,500	\$0	\$0	\$79,500
1.4.9			Cow Creek Riparian Inventory (Habitat Assessment); habitat; Fall Chinook and Steelhead; assess up to 2,060 acres of riparian habitat and 85 miles of river; Red Bluff FWS		# of FRP Actions and Evaluations; # of riparian acres restored; # of stream miles restored	Action 4 (High Priority) structural Y, endpoint Y; restore up to 2,060 acres of riparian habitat and 85 miles of river	N	\$106,000	\$106,000	\$0	\$0	\$106,000
1.4.10			Cow Creek Barrier Assessment (Habitat Assessment); passage; Fall Chinook and Steelhead; This assessment will help identify and prioritize barriers to restore access to 85 miles of stream; Red Bluff FWS		# of FRP Actions and Evaluations; # of habitat assessments; # of instream miles assessed	Action 3 (Medium Priority) structural Y, endpoint Y; 1 habitat assessment; 85 miles of stream assessed	N	\$212,000	\$212,000	\$0	\$0	\$212,000

AWP Activity Number	Type of Activity	# of FTE's	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding			
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources
1.4	Restoration Actions continued											
1.4.11			Sacramento River Reading Island Fish Habitat Improvement Project (Phase 1 Planning, Design, and Permitting); habitat; Spring Chinook, Winter Chinook, Late Fall Chinook, Fall Chinook, and Steelhead; restore up to 2.2 river miles of spawning habitat and up to 269 acres of floodplain; Red Bluff FWS		# of FRP Actions and Evaluations; # of floodplain acres restored; # of stream miles restored	Evaluation 2 (High Priority), 4 (High Priority), and 5 (High Priority) structural N, endpoint Y; 269 acres of floodplain habitat restored; 2.2 stream miles restored	N	\$212,000	\$212,000	\$0	\$0	\$212,000
1.4.12			Cosumnes River and Delta Cougar Wetland Restoration Project (Phase 1 Soils and Hydrologic Assessment, Final Design, and Permitting); habitat; Fall Chinook and Steelhead; Restore up to 85 acres of riparian and tidal shallow water-habitat; Stockton FWS		# of FRP Actions and Evaluations; # of floodplain acres restored	Evaluation 4 (High Priority) and 6 (High Priority) structural N, endpoint Y; 85 acres of floodplain restored	N	\$106,000	\$106,000	\$0	\$0	\$106,000
1.4.13			Mill Creek Fish Passage Project (Phase 1 Assessment, Planning, Design, and Permitting); passage; Fall Chinook and Spring Chinook; Restore access to 43 river miles of spawning and holding habitat; Red Bluff FWS		# of FRP Actions and Evaluations; # of miles re-opened to fish passage	Action 1 (High Priority) structural N, endpoint N; restore access to 43 miles of habitat	N	\$265,000	\$265,000	\$0	\$0	\$265,000
						Subtotal Funding		\$2,200,004	\$2,200,004	\$0	\$0	\$2,200,004
						Reclamation		\$0	\$0	\$0	\$0	\$0
						Service		\$2,200,004	\$2,200,004	\$0	\$0	\$2,200,004
						Other		\$0	\$0	\$0	\$0	\$0
1.5	Evaluations, Studies, Investigations, Research											
1.5.1		0	Yuba and Feather Sonar Arrays and Sturgeon Telemetry Study; Stockton FWS (See Table 4)		# of FRP Actions and Evaluations; # of population assessments completed	Evaluation 5 (Medium Priority) and 7 (High Priority); 1 population assessment completed	N	\$96,000	\$96,000	\$0	\$0	\$96,000
1.5.2		0	Sacramento River: Fall Chinook Redd Dewatering; CDFG (see Table 4)		# of FRP Actions and Evaluations; # of habitat assessments completed	Action 2 (High Priority); 1 habitat assessment completed	N	\$26,500	\$26,500	\$0	\$0	\$26,500

AWP Activity Number	Type of Activity	# of FTEs	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding			
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources
1.5	Evaluations, Studies, Investigations, Research continued											
1.5.3		0.49	San Joaquin River Sturgeon Acoustic Study; (Boat Operator 0.2 FTE; Fish Biologist 0.2 FTE; Fish Biologist 0.09 FTE) Stockton FWS (see Table 4)		# of FRP Actions and Evaluations; # of population assessments completed	Evaluation 4 (High Priority); 1 population assessment completed	N	\$115,925	\$115,925	\$0	\$0	\$115,925
1.5.4		0	Stanislaus River Steelhead Acoustic Study; Stockton FWS (see Table 4)		# of FRP Actions and Evaluations; # of population assessments completed	Evaluation 3 (High Priority); 1 population assessment completed	N	\$31,800	\$31,800	\$0	\$0	\$31,800
1.5.5		0.15	Stanislaus River: Fish Health Study; (Fish Biologist) CA/NEV Fish Health Center; Anderson, CA (see Table 4)		# of FRP Actions and Evaluations; # of population assessments completed	Evaluation 1 (High Priority); 1 population assessment completed	Y	\$32,940	\$32,940	\$0	\$0	\$32,940
1.5.6		0	Contaminants, Age, and Growth Study for Sturgeon; Stockton FWS (see Table 4)		# of FRP Actions and Evaluations; # of population assessments completed	Central Valley Evaluation 6 (High Priority) and 8 (High Priority); 1 population assessment completed	N	\$212,000	\$212,000	\$0	\$0	\$212,000
1.5.7		0	Stanislaus River Juvenile Chinook Mortality Study; Stockton FWS (see Table 4)		# of FRP Actions and Evaluations; # of population assessments completed	Evaluation 2 (Medium Priority); 1 population assessment completed	N	\$212,000	\$212,000	\$0	\$0	\$212,000
1.5.8		0.34	San Joaquin River Sturgeon Habitat Assessment; (Boat Operator 0.2 FTE; Fish Biologist 0.14 FTE) Stockton FWS (see Table 4)		# of FRP Actions and Evaluations; # of habitat assessments completed	Evaluation 4 (High Priority); 1 habitat assessment completed	N	\$80,558	\$80,558	\$0	\$0	\$80,558
1.5.9		0	San Joaquin River Sturgeon Habitat Assessment; E4 (High); (Bathymetry and Habitat Mapping with USGS) Stockton FWS (see Table 4)		# of FRP Actions and Evaluations; # of habitat assessments completed	Evaluation 4 (High Priority); 1 habitat assessment completed	N	\$91,351	\$91,351	\$0	\$0	\$91,351
						Subtotal Funding		\$899,074	\$899,074	\$0	\$0	\$899,074
						Reclamation		\$0	\$0	\$0	\$0	\$0
						Service		\$899,074	\$899,074	\$0	\$0	\$899,074
						Other		\$0	\$0	\$0	\$0	\$0

AWP Activity Number	Type of Activity	# of FTE's	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding			
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources
1.8	Planning											
1.8.1			CDFG Habitat Restoration Coordinators; Funding is for the continued support of three CDFG senior or equivalent biologists, one each from the Cooperator's Region 1 (Upper mainstem Sacramento River and tributaries from Kesw ick Dam south to, and including, Butte Creek on the east side and to Colusa Basin Drain on the west side of the upper mainstem of the Sacramento River) , Region 2 (Low er Sacramento River and Delta tributaries from the Feather River south to the Calaveras River (including the Feather, Yuba, American, Cosumnes, and Mokelumne rivers), and Region 4 (Sacramento-San Joaquin Delta and mainstem San Joaquin River including the Merced, Tuolumne, and the Stanislaus rivers), to act as Habitat Restoration Coordinators (HRCs). The State HRCs will continue to play a role in the interagency team w ith the AFRP to coordinate, develop, and implement restoration actions consistent with the Final Restoration Plan. CDFG will cost share up to 44% of the total cost of				\$498,169	\$293,273	\$0	\$204,896	\$498,169	
		</										

AWP Activity Number	Type of Activity	# of FTE's	Activity Name & Description	NMFS OCAP RPA#	Performance Metric	Performance Target	Complete this FY? Y/N	Total Project Cost	FY2011 Anticipated Funding			
									Restoration Fund	Water and Related Resources	State or Other Sources*	Total All Sources
			TOTAL FUNDING					\$6,274,896	\$6,070,000	\$0	\$204,896	\$6,274,896
			Total Funding Breakdown by Agency:									
			Reclamation					\$20,000	\$20,000	\$0	\$0	\$20,000
			Service					\$6,050,000	\$6,050,000	\$0	\$0	\$6,050,000
			Other					\$204,896	\$0	\$0	\$0	\$204,896
			Unfunded Needs									
1.4.14			Contaminants, Age, and Growth Study for Sturgeon (Phase 2); Stockton FWS					\$212,000	\$212,000	\$0	\$0	\$212,000
1.4.15			San Joaquin River Sturgeon Habitat Assessment; E4 (High); Stockton FWS					\$149,664	\$149,664	\$0	\$0	\$149,664
1.4.16			Fall Run Chinook Salmon Population Model for the Sacramento River Basin; CDFG					\$106,000	\$106,000	\$0	\$0	\$106,000
1.4.17			Sturgeon Abundance Population Estimate; CDFG					\$265,000	\$265,000	\$0	\$0	\$265,000
1.4.18			Thomes Creek Demonstration Project; Sacramento FWS					\$12,000	\$12,000	\$0	\$0	\$12,000
1.4.19			Cosummes/Calaveras Escapement, Passage, and Connectivity Assessments; Stockton FWS					\$53,000	\$53,000	\$0	\$0	\$53,000
1.4.20			South Cow Creek Fisheries Investigations (Phase 1) Video Weirs; Red Bluff FWS					\$212,000	\$212,000	\$0	\$0	\$212,000
1.4.21			Merced River Snelling Channel Restoration (Planning, Permitting, and Design; Pre-project Monitoring); gravel, habitat; Fall Chinook and Steelhead; A3(high), structural Y, endpoint Y; restore up to 2 miles of spawning habitat; Stockton FWS					\$164,602	\$164,602	\$0	\$0	\$164,602
1.4.22			Merced River Snelling Floodplain Restoration (Planning, Permitting, and Design; Pre-project Monitoring); habitat; Fall Chinook and Steelhead; A3(high) structural Y, endpoint Y; restore up to 600 acres of riparian floodplain; Stockton FWS					\$178,856	\$178,856	\$0	\$0	\$178,856
1.4.23			Deer Creek Fish Passage (DCID)(Final Design); passage; Fall Chinook, Spring Chinook, and Steelhead; A1 (high) structural N, endpoint N; restore access to 38 river miles; Red Bluff FWS					\$238,500	\$238,500	\$0	\$0	\$238,500
1.4.24			Stanislaus River Honolulu Bar Floodplain Restoration (Phase 3 Post Project Monitoring); gravel, habitat; Fall Chinook and Steelhead; A2(high) structural N, endpoint N; restore up to 2.4 acres of riparian floodplain and 1.5 miles of spawning habitat; Stockton FWS; NMFS OCAP BO Action III.2.3, p. 627 (see table 4)					\$63,060	\$63,060	\$0	\$0	\$63,060
			Total Unfunded Need					\$1,654,682	\$1,654,682	\$0	\$0	\$1,654,682

Table 2. FY 2011 Budget Breakout

Task	Agency	FTE	LABOR		CONTRACTS		USBR Only Misc. Costs	Total Costs
			Direct Salary and Benefits Costs ^{1/}	FWS Only Overhead Assess: 22% of Direct Salary and Benefits Costs ^{2/}	Contract, Grant, and Agreement Costs	FWS Only Overhead Assess: 6% Contract Costs ^{2/}		
1.1 Program Management	FWS	2.51	\$476,777	\$104,891	\$0	\$0		\$581,668
	USBR	0.1	\$20,000		\$0		\$0	\$20,000
1.2 Program Support	FWS	8.11	\$1,574,575	\$346,406	\$0	\$0		\$1,920,981
	USBR		\$0		\$0		\$0	\$0
1.4 Restoration Actions	FWS		\$0	\$0	\$2,075,475	\$124,529		\$2,200,004
	USBR		\$0		\$0		\$0	\$0
1.5 Evaluations, Studies, Investigations, Research	FWS	0.98	\$188,052	\$41,371	\$631,746	\$37,905		\$899,074
	USBR		\$0		\$0		\$0	\$0
1.8 Planning	FWS		\$0	\$0	\$276,673	\$16,600		\$293,273
	USBR		\$0		\$0		\$0	\$0
1.13 Modeling	FWS	0.71	\$127,049	\$27,951	\$0	\$0		\$155,000
	USBR		\$0		\$0		\$0	\$0
Administrative Total - FWS			\$2,366,453	\$520,619		\$179,034		\$3,066,106
Contracts, Grants and Agreements Total - FWS					\$2,983,894			\$2,983,894
FWS Total Costs		12.31	\$2,366,453	\$520,619	\$2,983,894	\$179,034		\$6,050,000
Administrative Total - USBR			\$20,000				\$0	\$20,000
Contracts, Grants and Agreements Total - USBR					\$0			\$0
USBR Total Costs		0.1	\$20,000		\$0		\$0	\$20,000
TOTAL ALL Restoration Funds & WRR Funds		12.41	\$2,386,453	\$520,619	\$2,983,894	\$179,034	\$0	\$6,070,000
TOTAL ALL OTHER FUNDING SOURCES*			\$0	\$0	\$0	\$0	\$0	\$204,896
GRAND TOTAL			\$2,386,453	\$520,619	\$2,983,894	\$179,034	\$0	\$6,274,896

1/ For FWS only: The FWS develops a bio-rate which is the combination of both the salary/benefit and related administrative costs. The FWS simple definition reads, "It is an average \$\$ rate that is developed and used for estimating project costs. It incorporates a biologists' salary and benefits, supervisory, clerical and biologist support costs and all other office operating costs related to completing project tasks.

2/ FWS assesses an O/H Burden charge of 6% on all contracts/agreements related to budget object codes starting with 25, 41, and 32, and a charge of 22% on costs under all other budget object codes.

*The total funding of \$204,896 represents cost share from California Department of Fish and Game (CDFG)

Table 3. Three-Year Budget Plan FY 2012 – 2014

(\$ amounts in thousands)

Year	Description of Activities	Requested RF Funding	Requested W&RR Funds
2012	Complete ongoing projects including the floodplain restoration projects on the Tuolumne River Bobcat Flat, Merced River Ranch, Merced River Snelling, Yuba River Hammon Bar, and Lower American River; and the fish passage projects in the Calaveras River (Caprini, California Traction Railroad Bridge, and Hosie Dams). High priority projects in focus watersheds such as the Stanislaus River Lovers Leap floodplain restoration project, Sacramento River Reading Island restoration project, Yuba River Narrows habitat enhancement, Deer Creek Fish Passage, and Mill Creek Riparian Habitat Restoration will begin.	\$6,500	\$0
2013	The highest priority projects will be to complete ongoing projects and continue or begin high priority projects in our focus areas consistent with our Implementation Plan. The ongoing floodplain restoration projects on the Tuolumne River Bobcat Flat, Merced River Ranch, Merced River Snelling, and Yuba River Hammon Bar; and the high priority projects in focus watersheds such as the Stanislaus River Lovers Leap floodplain restoration project, Sacramento River Reading Island restoration project, Yuba River Narrows habitat enhancement, Deer Creek Fish Passage, and Mill Creek riparian habitat restoration will be implemented.	\$6,900	\$0
2014	The highest priority projects will be to complete ongoing projects and continue or begin high priority projects in our focus areas consistent with our Implementation Plan. The ongoing floodplain restoration projects on the Merced River Ranch, Merced River Snelling, and Yuba River Hammon Bar; and the high priority projects in focus watersheds such as the American River riparian and floodplain restoration, Yuba River Narrows habitat enhancement, Stanislaus River Lovers Leap floodplain restoration project, Deer Creek Fish Passage, Mill Creek Riparian Habitat Restoration, Cottonwood Creek habitat restoration, and Cow Creek riparian habitat restoration will be implemented.	\$7,300	\$0

Note: The FY 2012 – 2014 Budget Plan provides estimates of capability only. The amounts are displayed are those that might be reasonably appropriated each year. These figures do not reflect the future Congressional Appropriations process. All of these estimates will be adjusted annually as RF collections are realized.

Table 4. 2011 AFRP Monitoring Projects

Project Description:	Friends of the Tuolumne will perform post-construction monitoring of completed sites at Bobcat Flat. If funded we will perform annual monitoring and data collection of river bed elevations and contours of restored sites.
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.13.1
Scope of the monitoring effort:	Tuolumne River at Bobcat Flat (spawning reach).
Product/deliverable:	Streambed raw data points will be collected. Computer models will be produced from the raw data as funds are available.
Cost:	Total cost for FY 2011 is \$30,000.
Questions posed:	What is the rate of sediment transport on newly restored sediment infusions (riffles and point bars) at Bobcat Flat.
Objectives:	Determine the useful life of sediment infusions to maintain adequate streambed conditions for fishery purposes.
Results – expected or actual:	Streambed movement is expected, but quantification is not yet determined.
Data collection methods:	Riverbed data will be collected through the use of a common survey field level and staff.
Data management:	Streambed data will be stored in log books and later entered into our consultant's data base for analysis. Raw data will be available to AFRP at any time. Reports and models will be provided when generated.
Assessment:	Sediment transport rates will be assessed for this reach of the Tuolumne River.
Use of information in future decision making:	Understanding sediment transport rates in this reach of the river will guide re-infusions of coarse sediment to maintain adequate river habitat.

Project Description:	Stanislaus River Floodplain and Side-channel Restoration at Honolulu Bar
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.4.5
Scope of the monitoring effort:	Post-project topographic surveys, cross-sections with pebble counts, flora success and succession, water temperature, stage, invertebrates, and fish use.

Product/deliverable:	Final Report
Cost:	\$63,060 (matched by Oakdale Irrigation District).
Questions posed:	What are the new topography and water temp and elevation parameters? Was revegetation/recolonization successful? Did fish & macro-invertebrates use the site?
Objectives:	Verify as-built, revegetation success, fish and macro-invertebrate use.
Results – expected or actual:	Topographic map. Water data. Biological data.
Data collection methods:	Standard survey techniques, pebble counts, temperature and pressure sensors with loggers, seining or electro-fishing, standard invertebrate sampling,
Data management:	Data recorded electronically in a database or spreadsheet.
Assessment:	The monitoring will assess project success and attempt to quantify change in available rearing habitat.
Use of information in future decision making:	Results will allow for improvement of future projects via adaptive management.
NMFS OCAP BO RPA	Action III.2.3, p. 627

Project Description:	Feather and Yuba River Sonar project—monitor green sturgeon movement and habitat use.
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.5.1 and 1.13.1
Scope of the monitoring effort:	Monitor green sturgeon movement and habitat use in the Feather and Yuba rivers, about which very little is known.
Product/deliverable:	Monitoring report on green sturgeon.
Cost:	\$106,000
Questions posed:	<ul style="list-style-type: none"> (1) What are the key habitat features that characterize green sturgeon holding and spawning habitat? (2) What factors inhibit accessibility of green sturgeon to upstream habitats (e.g., flow regime and passage barriers)?
Objectives:	<ul style="list-style-type: none"> (1) Identify potential sturgeon holding habitat (2) Tag and track green sturgeon
Results – expected or actual:	Plan to tag at least 2+ green sturgeon and characterize movements and habitat use.

Data collection methods:	Local expertise and side-scanning sonar to identify potential sturgeon habitat (to locate individuals for tagging); Vemco sonar tags to monitor large-scale movements, coupled with side-scanning sonar and video for behavior within pools.
Data management:	Electronic database that will be shared through NMFS website or its successor.
Assessment:	AFS methods for interpreting acoustic data.
Use of information in future decision making:	To determine what kinds of habitat restoration efforts would benefit green sturgeon.
NMFS OCAP BO RPA	None

Project Description:	Sacramento River Redd Dewatering
FY 2011 Project Complete?	No; FY10 project is not complete; the study plan is drafted and under review by multiple agencies.
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.5.2
Scope of the monitoring effort:	Sacramento River: Keswick Dam to Red Bluff Diversion Dam
Product/deliverable:	Digital database with raw data files and a final report that provides analysis of the data. Information on dates, sites, Keswick Releases during redd dewatering.
Cost:	The total AFRP funded FY2011 cost is \$26,500. This project is a collaborative project between AFRP, CDFG, DWR and Pacific States Marine Fisheries Commission (PSMFC).
Questions posed:	At what flows and dam release do Fall Chinook redds become dewatered? In which locations is dewatering most prevalent?
Objectives:	Determine when/where Fall Chinook redds are dewatered and map the locations correlated to river flows and dam releases.
Results – expected or actual:	The proposed activity will produce digital files and maps and a final report documenting the results of the monitoring activity.
Data collection methods:	Foot surveys comparing results from data collected from aerial and boat surveys.
Data management:	Digital files with raw data (i.e. GPS points) will be archived by the AFRP in an Excel database. A final report will be available on the AFRP website.
Assessment:	Dewatered redds will be mapped and correlated with river flows and dam releases.
Use of information in future decision making:	Redd dewatering information will assist with the identification of flow management strategies/recommendations (e.g. to prevent dewatering of redds and therefore assist with doubling natural

	production of Fall Chinook salmon).
NMFS OCAP BO RPA	None

Project Description:	San Joaquin River System Sturgeon Tagging and Acoustic Study
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.5.3
Scope of the monitoring effort:	San Joaquin River
Product/deliverable:	Digital database with raw data files, and a final report that provides an analysis of the data.
Cost:	The total cost for conducting this project in FY 2011 is \$115,925. This project is a collaborative project between Central Valley Fish Tracking Consortium (CVFTC), CDFG, and the USFWS.
Questions posed:	Do white or green sturgeon currently utilize the San Joaquin River for spawning? What is the migratory behavior of these species in the San Joaquin River system? How do movements relate to flows, temperature, or other parameters?
Objectives:	Identify white sturgeon and green sturgeon spawning habitat and use in the San Joaquin River system.
Results – expected or actual:	The proposed activity will produce digital files with raw telemetry data and a final report documenting the results of the monitoring activity.
Data collection methods:	A sonar array will be deployed in the San Joaquin River and collect telemetry data (i.e. movement, time, temperature, etc.) on tagged fish.
Data management:	Digital files with raw data will be archived by the AFRP in an Excel database. A final report documenting the results of the project will be available on the AFRP website.
Assessment:	The timing and duration of movements of adult green sturgeon or other species of interest during their spawning migration in the San Joaquin River will be evaluated. The environmental characteristics of sturgeon spawning habitat and juvenile rearing habitat will be described.
Use of information in future decision making:	Movement and habitat use data will assist AFRP with identifying future restoration actions for these species in the San Joaquin River. Green sturgeon is listed as threatened under the ESA and distribution data will assist AFRP with recovery efforts.

NMFS OCAP BO RPA	None
Project Description:	Stanislaus River Fish Health Study: The role disease, xenobiotic exposure, and impaired growth may have on the observed low egg to smolt survival for Stanislaus River Fall-run Chinook salmon is currently not understood. The USFWS California - Nevada Fish Health Center (FHC) has performed health and physiology evaluations of juvenile salmonids in the Sacramento, San Joaquin, and Klamath River basins since the early 1990's (reports at http://fws.gov/canvfhc). We propose to expand this initial work to examine juvenile salmon population in the lower Stanislaus on an annual basis and update the analysis approach based on gathered information.
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.5.5
Scope of the monitoring effort:	Stockton FWO and CANV FHC biologists will collect targeted life stages from both the upper and lower Stanislaus River.
Product/deliverable:	Provide managers with annual data on the influence of pathogens on salmonid health in the lower Stanislaus River as well as trends in energy reserves, growth, smoltification, and significant tissue changes associated with pesticide or metal exposures. A report will be provided at the conclusion of the lab work.
Cost:	\$32,940
Questions posed:	Are their potential impacts from contaminants and/or water quality to the survival of outmigrating juvenile salmonids in the Stanislaus River?
Objectives:	<p>Task 1 Determine the incidence and severity of infection for external and internal parasites including <i>Tetracapsuloides bryosalmonae</i> (causes Proliferative Kidney Disease), systemic viral and bacterial infections (including <i>R. salmoninarum</i> that causes Bacterial kidney disease in salmonids) in juvenile Chinook salmon (30 - 80 mm FL, February – May 2011).</p> <p>Task 2 Determine the energy reserves of juvenile Chinook salmon (30 - 80 mm FL, February – May 2011). Specific measurements to include whole body content of protein and triglyceride. Examine temporal and spatial trends.</p> <p>Task 3 Monitor gill Na-K- Adenosine Triphosphatase activity in population to track smoltification.</p>

	Task 4 Examine sections of liver, gill, and kidney for parasites and abnormalities associated with toxic insult.
Results – expected or actual:	Results will be based on examination of the fish, both externally and internally.
Data collection methods:	Fish will be taken from rotary screw traps at Oakdale and Caswell State Park.
Data management:	Data recorded electronically in a database or spreadsheet.
Assessment:	Monitoring will assess potential limiting factors that may affect juvenile salmonid survival associated with water quality and contaminants in the lower Stanislaus River.
Use of information in future decision making:	Provide managers with annual data on the influence of pathogens on salmonid health in the lower Stanislaus River as well as trends in energy reserves, growth, smoltification, and significant tissue changes associated with pesticide or metal exposures.
NMFS OCAP BO RPA	None

Project Description:	San Joaquin River System and Delta Contaminants, Age and Growth, and Microchemistry Project
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.5.6
Scope of the effort:	San Joaquin River and Sacramento/San Joaquin Delta
Product/deliverable:	Digital database with raw data files, and four final reports that provide analyses of the data.
Cost:	The total cost for conducting this project in FY 2011 is approximately \$212,000. This project is a collaborative project between CDFG, USFWS, and the University of California-Davis.
Questions posed:	How are ambient levels of trace elements and organic contaminants affecting the health of adult white sturgeon and green sturgeon, the viability of their gametes, and development of their offspring? Are contaminant issues prevalent throughout the Delta, or localized? Does removing the anterior pectoral fin ray affect growth and survival of adult white sturgeon? What are current characteristics of age and growth of adult white sturgeon? Have age and growth characteristics of white sturgeon changed since the mid-1970s? Can microchemistry technology be used to identify basin of origin, rearing areas, marine migrations, and spawning periodicity of white sturgeon?
Objectives:	Identify the effects of contaminants on sturgeon populations, assess effects of fin ray removal on growth and survival of white sturgeon, assess current age-and-growth characteristics of white sturgeon, and

	identity rivers and delta locations where white sturgeon are spawning and rearing, the frequency and spatial and temporal aspects of marine migrations, and spawning periodicity of white sturgeon.
Results – expected or actual:	The proposed activity will produce digital files of raw data and final reports documenting the results of the monitoring activities.
Data collection methods:	Tissue and fin ray samples will be collected from angler-caught adult white sturgeon for the contaminants and microchemistry project components. Farmed white sturgeon will be used to assess effects of fin ray removal and to validate microchemistry results. The majority of fin ray samples for the microchemistry component of this project will be supplied by CDFG during their fall trammel netting surveys.
Data management:	Digital files with raw data will be archived by the AFRP in a database. Final reports documenting the results of the project will be available on the AFRP website.
Assessment:	Effects of contaminants on all life stages of white sturgeon and green sturgeon, effects of fin ray removal on growth and survival of adult white sturgeon, and population dynamics characteristics of white sturgeon will be evaluated. Environmental characteristics of sturgeon spawning habitat and juvenile rearing habitat will be described.
Use of information in future decision making:	Effects of contaminants on sturgeon and habitat use information will assist AFRP with focusing future restoration actions for these species in the San Joaquin River and the Sacramento-San Joaquin Delta. Green sturgeon is listed as threatened under the ESA and distribution data will assist AFRP with recovery and doubling efforts.

Project Description:	Stanislaus River Juvenile Chinook Mortality Study -Investigate sources of mortality in the lower Stanislaus River using PIT tags.
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY11 AFRP AWP 1.5.7
Scope of the monitoring effort:	Lower Stanislaus River and potentially out to Chipps Island.
Product/deliverable:	Data on survival of tagged juvenile Chinook. Report analyzing mortality.
Cost:	\$212,000 for initial setup and year 1.
Questions posed:	Is there a point source for juvenile salmon mortality in the lower river? What is the magnitude of mortality though various river habitats?

Objectives:	Identify and document sources of mortality in the lower river.
Results – expected or actual:	Identify sources of mortality in the lower river. Determine if the mortality is constant or if mortality rates are higher in certain areas.
Data collection methods:	Insert PIT tags into juvenile salmonids and track reach specific survival using stationary and mobile detectors, as well as using wands at downstream sampling locations.
Data management:	Data will be collected electronically in a database or spreadsheet format.
Assessment:	The project will be assessing the mortality of juvenile Chinook salmon in the Stanislaus River.
Use of information in future decision making:	Help prioritize restoration actions.
NMFS OCAP BO RPA	Will provide guidance to implement Action III.2.3 page 627

Project Description:	San Joaquin River and Delta Sturgeon Habitat Assessment
FY 2011 Project Complete?	No
CVPIA annual work plan subtask number:	FY 11AFRP AWP 1.5.8
Scope of the effort:	San Joaquin River and Sacramento/San Joaquin Delta
Product/deliverable:	Digital database with raw data files, and final reports that provide analyses of the data.
Cost:	The total cost for conducting this project in FY 2011 is approximately \$108,429. This project is a collaborative project between CDFG, USFWS, and the University of California-Davis.
Questions posed:	Are white sturgeon or green sturgeon spawning in the San Joaquin River? What are the spatial and temporal distributions of sturgeon spawning in the San Joaquin River. Funding in future years will be applied to answer additional questions, such as: Are there specific spawning habitat characteristics that would help identify additional spawning locations? Can sonar technology be used to develop sturgeon abundance estimates?
Objectives:	The objectives of this project are to document sturgeon spawning activity in the San Joaquin River, and identify and evaluate similar habitat throughout the river for spawning activity. Further, a pilot study to estimate sturgeon abundance using sonar will be tested.
Results – expected or actual:	The proposed activity will produce digital files of raw data and final reports documenting the results of the monitoring activities.

Data collection methods:	Egg collection mats will be used to assess spawning activity. Collected eggs will be identified to species and be subject to genetic testing.
Data management:	Digital files with raw data will be archived by the AFRP in a database. A final report documenting the results of the project will be available on the AFRP website.
Assessment:	Sturgeon spawning habitat in the San Joaquin River will be evaluated. Environmental characteristics of sturgeon spawning habitat will be described.
Use of information in future decision making:	Identifying sturgeon spawning habitat will help AFRP to focus future restoration actions for these species in the San Joaquin River. Green sturgeon is listed as threatened under the ESA and identifying spawning locations will assist AFRP and other agencies with recovery and doubling efforts.